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09/763,582	02/22/2001	Eiji Okamoto	9319S-000178	9306

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EXAMINER

QI, ZHI QIANG

ART UNIT PAPER NUMBER

2871

DATE MAILED: 01/16/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/763,582

Applicant(s)

OKAMOTO ET AL.

Examiner

Mike Qi

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) 16-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2/22/01. 6) ☐ Other: _____

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DETAILED ACTION

1. Applicant's election with traverse of Oct.14, 2003 is acknowledged. The traversal is on the ground(s) that Applicants request withdrawal of the Restriction requirement. This is not found persuasive because claims 16-23 are methods for fabricating a liquid crystal display device and such liquid crystal display device can be made by another process such as the covering step by a mask does not need to be employed, and the search for the method steps such as how to do the roughening would need different searches. Therefore, the burden would exist.

The requirement is still deemed proper and is therefore made FINAL.

2. Claims 16-23 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement of Oct.14, 2003.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by JP 08313890 (Hidenori et al).

Claim 1, Hidenori discloses (abstract; Fig.9; paragraphs 0086 – 0090) that a substrate (TFT substrate 49) for a liquid crystal display wherein:

- the surface on the side of the liquid crystal layer comprises a planar region (flat area 50) and a roughened region (roughened area 51) comprising microscopic peaks and valleys;
- the heights of the tops of the peaks in the roughened region (51) are equal to or lower than the level of the plane including the planar region (50) (shows on the Fig.9).

Therefore, the limitations claimed in the claim1 are met by the reference Hidenori.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 2-4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hidenori as applied to claim 1 above, and further in view of JP 10-062604 (Hideo) and US 6,315,801 (Miyazaki et al).

Claims 2 and 3, Hidenori does not expressly disclose that a predetermined mark

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is formed in the planar region, and the predetermined mark is an alignment mark.

However, Hideo discloses (abstract; Figs.1, 4, 6; paragraphs 0030 – 0032; 0059 –0061) that the photoresists (2') become alignment mark area, and which is formed in the planar region, and using alignment mark would easily perform alignment of the substrates, because the alignment mark is easy to read and to obtain accuracy alignment when bonding the substrates together.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange alignment mark in the planar region as claimed in claims 2 and 3 for obtaining easier read and accuracy alignment of the substrates when bounding the substrates together.

Claim 4, Hidenori and Hideo do not expressly disclose that the predetermined mark is a process control mark.

However, Miyazaki discloses (col.2, line 58 – col.3, line 15) that during mass production having several process (the process can be used in production of electrode plate or production of a liquid crystal display device), and in order to effectively perform these processes with high accuracy, it is available to apply process control marks, position alignment marks and apply various identification marks such as manufacture lot numbers, bar codes and the like for easy identification and manufacture control.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange a process control mark as claimed in claim 4 for achieving effectively perform the production process with a high accuracy.

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Claim 5, Hidenori discloses (Fig.9; paragraph 0089) that the wiring is formed on the flat area (50), i.e., a planar region.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hidenori as applied to claim 1 above, and further in view of US 5,973,763 (Fujimura et al).

Claim 6, Hidenori does not expressly disclose that a sealant is formed in the planar region.

However, it is common and known in the art to form a sealant in a planar region as sealing the two substrates in a planar region would be easier to obtain a sufficient adhesion. Such as Fujimura discloses (col.1, lines 13- 30) that, generally, the first substrate and the second substrate are bounded though a seal material, and then the two substrates are adhered together by a certain pressure. Therefore, if the sealant is formed in a roughened region, the two substrates would be insufficiently sealed; and the sealant is formed in a planar region, the two substrates would be able to obtain a hermetical seal by a certain pressure.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to arrange a sealant in the planar region as claimed in claim 6 for achieving a hermetical seal.

8. Claims 7-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hidenori as applied to claim 1 above, and further in view of US 6,130,736 (Sasaki et al).

Claims 7-13, Hisenori doe not expressly disclose that the maximum height R_y , the arithmetic mean roughness R_a , the ten-point average roughness R_z , and the mean

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wavelength S_m in the roughness region are in predetermined ranges, and the ranges are set as claimed.

However, Sasaki discloses (col.2, line 50 – col.7, line 59; col.8, line 33 – col.9, line 50; Fig.1) that the reflector member (15) having a surface roughness of $1\text{ }\mu\text{m}$ or less and a width of the concave portion is $45\text{ }\mu\text{m}$ or less. Therefore, the roughened region must have a certain range to represent the roughness. Sasaki discloses (col.6, lines 39-65) that in accordance with the reflector having such corrugated surface, the reflecting efficiency is improved and a bright display screen is attained, and the reflecting direction can be set in a wider range.

A certain roughness (such as the arithmetic mean roughness R_a) would determine the maximum height of roughness R_y , the ten-point average roughness R_z , and the mean wavelength (the pitch of the roughness peak) S_m . Sasaki discloses (col.9, lines 33-50) that it is more preferable to set the surface roughness of the reflector at $1\text{ }\mu\text{m}$ or less, i.e., the arithmetic mean roughness R_a is set at $1\text{ }\mu\text{m}$ or less. Therefore, those skilled in the art would develop a proper roughness value as claimed in claims 8-13 to obtain a proper reflection and scattering so as to improve the display quality, and that would have been obvious.

Claims 14-15, the limitations are in the preamble, so that are only given weight as intended use. Because any liquid crystal display device would comprise two substrates and a liquid crystal layer interposed between the two substrates; and any display can be used for any electronic apparatus, and that would have been at least obvious.

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Conclusion

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (703) 308-6213.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Mike Qi
December 30, 2003


ROBERT H. KIM
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